

ASSESSMENT OF NUTRITIONAL STATUS AND MENARCHEAL

AGE OF RURAL ADOLESCENT GIRLS

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ABSTRACT

Age at menarche is a significant indicator of growth and sexual maturation in girls. During adolescence, anthropometry provides a tool for monitoring and evaluating the hormone-mediated changes in growth and reproductive maturation. Menarche is defined as the first menstrual period. It is considered to be the most obvious sign of puberty in girls. 68 adolescent girls belonging to the age group of 14-16 years from five randomly selected villages in Medchal mandal were selected as a study group. Majority of the subjects were students and remaining were engaged in household activities and laborer. Anthropometric measurements were taken to assess nutritional status. The average BMI of the subjects was 18.0 ± 1.16 . Blood hemoglobin levels were analyzed and the results showed 77.9% of the girls were anemic. The average age of menarche was 12.6 years. The intermenstrual interval for 75.3% was 15-30 days, which is normal. The number of days of discharge was between 3-5 days for 70.6% subjects and it was less than 3 days and greater than 5 days for 7.3% and 22.1% of the subjects respectively. The common physical disturbances reported by the subjects were stomachache (25%), back pain (8.8%), and leg pains (7.3%). The common psychological problems reported by the subjects were drowsiness, irritability, and anger (48.5%); irritability and anger (11.8%) and only drowsiness (8.8%). 30.9% reported no psychological disturbances during menstrual periods. Majority of the subjects who complained menstrual abnormalities and disturbances were found to be anaemic. Sweets and citrus fruits were specifically given during the time of menarche and they avoid papaya, mango, banana, groundnut, guavas, eggs, curd, and spicy foods during the menstrual periods.

KEYWORDS: Adolescence, Menarche, Anaemia, Haemoglobin (HB), Anthropometry & Nutritional Status

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INTRODUCTION

Adolescence is a transitional phase of growth and development between childhood and adulthood. The World Health Organization (WHO) defines adolescents any person between ages 10 and 19. Adolescence in girls has been recognized as a special period which signifies the transition from girlhood to womanhood. This transitional period is marked with onset of menarche. Onset of maturation and age at menarche are influenced by several factors, e.g., genetics, ethnicity, height, weight, body mass index (BMI), and socioeconomic circumstances. (Attallah NL 1978, Ekele BA et al 1996). The age of onset of menstruation varies from 9 to 18 years with the average age in India being around 12 years (Khadilkar V.V. et al 2006, Chumlea WC et al 2003).

Menstruation is a normal physiological process that begins during adolescence and may be associated with occurrence of various symptoms before and during the menstruation. These include psychological adjustment with menstruation, premenstrual and menstrual symptoms and disorders of menstruation. Female experiences premenstrual symptoms, 7 to 10 days before the onset of bleeding. These include irritability, malaise, headache, acne, abdominal pain etc. The menstruation in majority of female is asymptomatic apart from per vaginal bleeding; however some may have pain in abdomen with or without gastrointestinal upsets like anorexia and vomiting (Padubidri VN et al 1997). Complaints like leg pain, backache may also be associated with normal menstrual cycle (Banerjee D et al 1961). The medical and social consequences of premenstrual, menstrual symptoms and disorders of menstruation influence not only the individual but also her family and society. In respect to adolescent girls, it may manifest as loss of school days leading to poor progress in education. This may lead to problems in continuation of her education (Deo D S et al 2007a). However, few studies in India have described the lifestyle factors associated with various menstrual cycle patterns. The present study aims to assess the nutritional status of adolescent girls, determine the age of menarche, pattern of menstruation, problems during menstruation, and feeding practices during menstrual periods.

MATERIALS AND METHODS

Across sectional study was conducted in five randomly selected villages in Medchal mandal of Ranga Reddy district, Andhra Pradesh. The list of adolescent girls belonging to the age group of 14 - 16 years in each village was obtained from the Community Health Volunteers of the village. Informed oral consent was obtained from the parents of the girls included in the study. A house-to-house visit was made to collect the necessary information. Structured questionnaire were followed to know the details of socioeconomic status of the adolescence girls. The questionnaire consist of some open ended questions to collect details of the subjects for age, menarche age, socio-economic status, problems during menstruation, special foods given and avoided during the menstrual periods. Heights and weight for all the study subjects were measured by a single investigator using standard procedures.

Nutritional Status was calculated as BMI [$Wt (kg)/Ht^2 (m)$] and compared with published ICMR standards. Blood samples were collected by a trained technician using standard procedures. The blood sample was transferred to an amber colored bottle containing EDTA di sodium salt. Hemoglobin was estimated using Cyanmethemoglobin method (Dacie and Lewis, 1975).

RESULTS AND DISCUSSIONS

The study group comprised 68 adolescent girls of 14-16 years age group, among which 51.5% belonged to 14-15 years age group and 48.5% belonged to 15-16 years age group. About 42.6% of the study groups were students, 45.6% were laborers, and 11.8% were engaged in household work. Majority of the subjects (70.6%) belonged to nuclear families and the rest (29.4%) to joint families. The family size was 4-6 members for majority of the subjects (73.5%) followed by 7-9 members (26.5%).

Nutritional status of the adolescent girls based on BMI shows (Table 1) that majority (64.7%) of the subjects was underweight with BMI below 18.5. Only 2% of the subjects were severely thin with BMI below 16. Mild thinness was found among 42.64% of the subjects and 19.12% of the subjects were moderately thin. The average BMI of the subjects was 18.0 ± 1.16 .

Table 1: Classification of Subjects based on BMI

S. No.	BMI	Classification	Number (%)	Mean BMI
1	18.5-24.99	Normal	24(35.3)	19.17
2	17.0-18.49	Mild thinness	29(42.64)	17.8
3	16.0-16.99	Moderate thinness	13(19.12)	16.5
4	<16.0	Severe thinness	2(2.94)	15.7
	Total		68(100)	18.0±1.16
Ref: WHO2004				

Blood hemoglobin levels were analyzed and the results showed 77.9% of the girls were anemic (haemoglobin levels less than 12 g/dl) with a mean hemoglobin level of 10.94 ± 1.9 g/dl. About 45.6% of the subjects were mildly anaemic with haemoglobin levels between 10 and 11.99 g/dl, 30.9% were moderately anaemic with haemoglobin levels in 7-9.99 g/dl range, and remaining 1.5% of the girls were severely anaemic with haemoglobin levels below 7 g/dl. (Table 2)

Table 2: Hemoglobin Status of Subjects

S. No	Groups	Cut off Values	No. of Subjects	Mean Hblevelsg/dl
1	Non anemic	12g/dl	15 (22%)	13.57
2	Mild	10 -11.99 g/dl	31 (45.6%)	11.0
3	Moderate	7 – 9.99 g/dl	21 (30.9 %)	9.2
4	Severe	< 7 g/dl	1 (1.5%)	6.8
Total	68 (100%)			10.94±1.9

Table 3 gives the menarcheal information of adolescent girls. The results show that the average age of menarche was 12.6 years. 45.6% of the subjects attained menarche at the age of 13 years. 44.1% girls reported age of menarche as 12 years age, 5.9% of the subject's attained menarche at 11 years, and 4.4% of the subjects at 14 years of age. The intermenstrual interval was between 15-30 days, which is normal, for 75.3% of the subjects, and it was between 30-45 days, >45 days, and <15 days for 14.7%, 8.82%, and 2.94% subjects respectively. The number of days of discharge was between 3-5 days for 70.6% subjects and it was less than 3 days and greater than 5 days for 7.3% and 22.1% of the subjects respectively.

The physical disturbances(Table 4b) includes only back ache (8.8%), stomach ache and muscular pain in legs for 8.8% of subjects, 14 (20.6%)subjects reported all types of physical disturbances. 11 (16.2%) reported no physical disturbances during the menstrual periods. 17 (25%), 6(8.8%), and 5(7.3%) individuals reported only stomachache, back ache, and leg pains respectively. 15 (22.1%) of the subjects reported only two, mostly back ache and stomach pain.

Among 68 subjects, 48.5%reported drowsiness and irritability and anger, 11.8% reported irritability and anger, and 8.8% reported drowsiness during the menstrual periods. The remaining30.9% reported no psychological disturbances during menstrual periods. Majority of the subjects who complained menstrual abnormalities and disturbances were found to be anaemic.

Table 3: Information on Menstrual Cycle

Table 3a: Age at menarche		
S. No	Details	
1	age of menarche (yrs)	No. of subjects (n=68)
2	11	4(5.9%)
3	12	30(44.1%)
4	13	31(45.6%)
5	14	3(4.4%)
Average age at menarche	12.6	

Table 3b: Menstrual Abnormalities and Disturbances			
S. No	Details		
A	Menstrual Abnormalities		
	Intermenstrual Interval	No. of Subjects (n = 68)	Prevalence of Anaemia
i	<15 days	2(2.94%)	1(50)
ii.	15-30 days	50(13.53%)	41(82)
iii.	30-45 days	10(14.71)	7(70)
iv.	>45 days	6(8.82)	4(67)
B.	Discharge (no. of days)		
i	<3days	5(7.3%)	4(80)
ii.	3-5 days	48(70.6%)	37(77)
iii.	>5 days	15(22.1%)	12(80)
C	Disturbances		
a.	Physical		
i.	back ache	6(8.82%)	5(83)
ii.	stomach ache	17(25)	15(88)
iii.	pain in limbs	5(7.3)	3(60)
iv.	any two	15(22.1)	13(87)
v	all	14(20.6)	12(86)
vi	none	11(16.2)	5(45)
b.	Psychological		
i.	Irritability	8(11.8)	7(88)
ii	Drowsiness	6(8.8)	4(67)
iii.	Both	33(48.5)	26(79)
iv.	None	21(30.9)	16(76)

The results of data on dietary modifications during menstrual periods revealed that citrus fruits (mainly oranges, sweet lime) and sweets (til seeds laddu etc.) were specifically included in the diet. The main reason they felt for giving these foods was that they provide energy and cause coolness to the body. The foods that were avoided mainly included groundnut, curd, egg, and spicy foods. These foods are avoided mainly due to the belief that they cause stomach ache, not very easily digestible, and they cause heat to the body. They also completely stay away from eating papayas with the misconception that this may cause heavy bleeding. They also avoid guava, banana, and mangoes; the only reason for avoiding these is that they cause heat to the body, indigestible, and heavy feeling in the stomach (Table4).

Table 4: Dietary Modifications during Menstrual Period

Foods Avoided	Foods Given
Groundnut	Oranges
Curds	Sweet lime and other citrus fruits
Egg	Sweets
Papaya	
Guavas	
Banana	
Mangoes	
Spicy foods	

CONCLUSIONS

In this study, the average age of menarche was 12.6 years. Majority of the subjects who complained of menstrual abnormalities and disturbances were anaemic. Some of the healthy foods are avoided during the menstrual periods. As a nutritional status of adolescent girls contributes to the nutritional status of the community, there is a need to initiate intervention measures to improve the nutritional status of adolescent girls who are the future 'mothers-to-be'. Hence, there

is a need to create awareness among adolescents and their family about nutrition and health.

REFERENCES

1. Attallah, N. L. 1978. Age at menarche of schoolgirls in Egypt. *Annals of Human Biology*. 5(2):185–189.
2. Banerjee, D and Mukherjee, S. P. 1961. The menarche in Bengalese Hindu girls. *Journal of Indian Medical Association*. 37(6):261–263
3. Bharati, P., Bharati, S. 1998. . Rlation between menarcheal age and nutritional anthropometry in urban girls of the Howrah District, West Bengal, India. *Anthropol Anzeiger*. 56(1):57-61
4. Chumlea, W. C., Schubert, C. M., Roche A. F., et al. 2003. Age at Menarche and Racial Comparisons in US Girls. *Pediatrics*. 111:110–113.
5. Dacie, J.V. and Lewis, S.M. 1975. *Practical Haematology*. 5th edition. Churchill Livingstone: Edinburgh, London, New York
6. Deo, D. S and Ghattargi C. H. 2007a. Menstrual problems in adolescent school girls: A comparative study in urban and rural area. *Indian journal of preventive and social medicine*. 38(1 and 2):64–68
7. Ekele, B. A., Udoeyop, E. U and Otubu, J. A. 1996. Age at menarche amongst school girls in a high altitude Nigerian town. *West African Journal of Medicine*. 15(3):170–172
8. Khadilkar, V. V., Stanhope, R. G and Khadilkar V. 2006. Secular trends in puberty. *Indian Pediatrics*. 43:475–478.
9. Padubidri, V. N and Daftary S. N. 1997. *Shaw's textbook of gynecology*. 11th edition. B. J. Churchill Livingstone publication. pp. 53–64.
10. WHO: *Nutrition in adolescence-Issues and Challenges for the Health Sector WHO discussion paper on adolescent*; 2005.

